



# SEQUENCE LISTING

<110> TAYLOR, Catherine, et al.

<120> DNA ENCODING APOPTOSIS-INDUCED EUCARYOTIC INITIATION FACTOR-5A AND DEOXYHYPUSINE SYNTHASE AND A METHOD FOR CONTROLLING APOPTOSIS IN ANIMALS AND HUMANS

<130> 10799/13

<140> 09/909,796

<141> 2001-07-23

<160> 21

<170> FastSEQ for Windows Version 4.0

<210> 1

<211> 1139

<212> DNA

<213> Rodent

<220>

<221> CDS

<222> (33)...(497)

<400> 1

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Glu Thr Gly Asp Ala Gly Ala Ser Ala Thr Phe Pro Met Gln Cys Ser
      10             15             20

gca tta cgt aag aat ggt ttt gtg gtg ctc aag ggc cgg cca tgt aag 149
Ala Leu Arg Lys Asn Gly Phe Val Val Leu Lys Gly Arg Pro Cys Lys
      25             30             35

atc gtc gag atg tct act tcg aag act ggc aag cat ggc cat gcc aag 197
Ile Val Glu Met Ser Thr Ser Lys Thr Gly Lys His Gly His Ala Lys
      40             45             50             55

gtc cat ctg gtt ggt att gat att ttt act ggg aag aaa tat gaa gat 245
Val His Leu Val Gly Ile Asp Ile Phe Thr Gly Lys Lys Tyr Glu Asp
      60             65             70

atc tgc ccg tcg act cat aac atg gat gtc ccc aac atc aaa agg aat 293
Ile Cys Pro Ser Thr His Asn Met Asp Val Pro Asn Ile Lys Arg Asn
      75             80             85

gat ttc cag ctg att ggc atc cag gat ggg tac cta tcc ctg ctc cag 341
Asp Phe Gln Leu Ile Gly Ile Gln Asp Gly Tyr Leu Ser Leu Leu Gln
      90             95             100
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gac agt ggg gag gta cga gag gac ctt cgt ctg cct gag gga gac ctt 389  
 Asp Ser Gly Glu Val Arg Glu Asp Leu Arg Leu Pro Glu Gly Asp Leu  
 105 110 115

ggc aag gag att gag cag aag tat gac tgt gga gaa gag atc ctg atc 437  
 Gly Lys Glu Ile Glu Gln Lys Tyr Asp Cys Gly Glu Glu Ile Leu Ile  
 120 125 130 135

aca gtg ctg tcc gcc atg aca gag gag gca gct gtt gca atc aag gcc 485  
 Thr Val Leu Ser Ala Met Thr Glu Glu Ala Ala Val Ala Ile Lys Ala  
 140 145 150

atg gca aaa taa ctggcttcca ggggtggcggg ggtggcagca gtgatccatg 537  
 Met Ala Lys \*

agcctacaga ggccctcccc ccagctctgg ctgggcccctt ggctggactc ctatccaatt 597  
 tatttgacgt tttatttttg ttttctcac ccttcaaac tgtcggggag accctgccct 657  
 tcacctagct cccttggcca ggcattgagg agccatggcc ttggtgaagc tacctgcctc 717  
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 ctcccttttt ctttttaatt caatttggaa tcagaaagct gtggattctg gcaaatggctc 837  
 ttgtgtcctt tatccactc aaacccatct ggtcccctgt tctccatagt ccttcacccc 897  
 caagcaccac tgacagactg gggaccagcc ccttccctg cctgtgtctc ttcccaaacc 957  
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 tgggaaggcc ttgcccccat gggctttacc ctttctgtg ggctttctcc ctgacacatt 1077  
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 aa 1139

<210> 2  
 <211> 154  
 <212> PRT  
 <213> Rodent

<400> 2  
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 1 5 10 15  
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 20 25 30  
 Leu Lys Gly Arg Pro Cys Lys Ile Val Glu Met Ser Thr Ser Lys Thr  
 35 40 45  
 Gly Lys His Gly His Ala Lys Val His Leu Val Gly Ile Asp Ile Phe  
 50 55 60  
 Thr Gly Lys Lys Tyr Glu Asp Ile Cys Pro Ser Thr His Asn Met Asp  
 65 70 75 80  
 Val Pro Asn Ile Lys Arg Asn Asp Phe Gln Leu Ile Gly Ile Gln Asp  
 85 90 95  
 Gly Tyr Leu Ser Leu Leu Gln Asp Ser Gly Glu Val Arg Glu Asp Leu  
 100 105 110  
 Arg Leu Pro Glu Gly Asp Leu Gly Lys Glu Ile Glu Gln Lys Tyr Asp  
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 130 135 140  
 Ala Ala Val Ala Ile Lys Ala Met Ala Lys  
 145 150

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<211> 462  
<212> DNA  
<213> Rodent

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cagtgtctcag cattacgtaa gaatggcttt gtggtgctca aaggccggcc atgtaagatc 120  
gtcgagatgt ctacttcgaa gactggcaag cacggccacg ccaagggtcca tctgggttgg 180  
attgacatct ttactgggaa gaaatatgaa gatatctgcc cgtcaactca taatatggat 240  
gtccccaaca tcaaaaggaa tgacttccag ctgattggca tccaggatgg gtacctatca 300  
ctgctccagg acagcgggga ggtacgagag gaccttcgtc tccctgaggg agaccttggc 360  
aaggagattg agcagaagta cgactgtgga gaagagatcc tgatcacggt gctgtctgcc 420  
atgacagagg aggcagctgt tgcaatcaag gccatggcaa aa 462

<210> 4  
<211> 462  
<212> DNA  
<213> Rodent

<220>  
<221> misc\_feature  
<222> (1)...(462)  
<223> n = A,T,C or G

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cagtgtctcg ccttgcgcaa aaacggcttc gtggtgctca aaggacgacc atgcaaaata 120  
gtggagatgt caacttccaa aactggaaag catggtcatg ccaagggtcca ccttgttggg 180  
attgatattt tcacgggcaa aaaatatgaa gatatttgtc cttctactca caacatggat 240  
gttccaaata ttaagagaaa tgattatcaa ctgatatgca ttcaagatgg ttacctttcc 300  
ctgctgacag aaactgggtga agttcgtgag gatcttaaac tgccagaagg tgaactaggc 360  
aaagaaatag agggaaaata caatgcaggt gaagatgtac aggtgtctgt catgtgtgca 420  
atgagtgaag aatatgctgt agccataaaa ccctnngcaa at 462

<210> 5  
<211> 462  
<212> DNA  
<213> Rodent

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cagtgtctcag cattacgtaa gaatgggttt gtggtgctca aaggccggcc atgtaagatc 120  
gtcgagatgt ctacttcgaa gactggcaag catggccatg ccaagggtcca tctgggttgg 180  
attgacattt ttactgggaa gaaatatgaa gatatctgcc cgtcgactca taatatggat 240  
gtccccaaca tcaaacggaa tgacttccag ctgattggca tccaggatgg gtacctatcc 300  
ctgctccagg acagtgggga ggtacgagag gaccttcgtc tgctgaagg agaccttggc 360  
aaggagattg agcagaagta tgactgtgga gaagagatcc tgatcacagt gctgtctgcc 420  
atgacagagg aggcagctgt tgcaatcaag gccatggcaa aa 462

<210> 6  
<211> 606  
<212> DNA  
<213> Rodent

<220>

<221> CDS

<222> (1)...(456)

<400> 6

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Ala Val Tyr Tyr Trp Ala His Lys Asn His Ile Pro Val Leu Ser Pro
1 5 10 15

gca ctc aca gac ggc tca ctg ggt gac atg atc ttt ttc cat tcc tat 96
Ala Leu Thr Asp Gly Ser Leu Gly Asp Met Ile Phe Phe His Ser Tyr
20 25 30

aaa aac cca ggc ttg gtc ctg gac atc gtt gaa gac ctg cgg ctc atc 144
Lys Asn Pro Gly Leu Val Leu Asp Ile Val Glu Asp Leu Arg Leu Ile
35 40 45

aac atg cag gcc att ttc gcc aag cgc act ggg atg atc atc ctg ggt 192
Asn Met Gln Ala Ile Phe Ala Lys Arg Thr Gly Met Ile Ile Leu Gly
50 55 60

gga ggc gtg gtc aag cac cac atc gcc aat gct aac ctc atg cgg aat 240
Gly Gly Val Val Lys His His Ile Ala Asn Ala Asn Leu Met Arg Asn
65 70 75 80

gga gct gac tac gct gtt tat atc aac aca gcc cag gag ttt gat ggc 288
Gly Ala Asp Tyr Ala Val Tyr Ile Asn Thr Ala Gln Glu Phe Asp Gly
85 90 95

tca gac tca gga gcc cgg cca gat gag gct gtc tcc tgg ggc aag atc 336
Ser Asp Ser Gly Ala Arg Pro Asp Glu Ala Val Ser Trp Gly Lys Ile
100 105 110

cgg atg gat gca cag cca gta aag gtc tat gct gat gca tct ctg gtt 384
Arg Met Asp Ala Gln Pro Val Lys Val Tyr Ala Asp Ala Ser Leu Val
115 120 125

ttc ccc ttg ctg gtg gct gag aca ttc gcc caa aag gca gat gcc ttc 432
Phe Pro Leu Leu Val Ala Glu Thr Phe Ala Gln Lys Ala Asp Ala Phe
130 135 140

aga gct gag aag aat gag gac tga gcagatgggt aaagacggag gcttctgcc 486
Arg Ala Glu Lys Asn Glu Asp *
145 150

cacctttatt tattatttgc ataccaaccc ctctctgggcc ctctccttg ttagcagcat 546
cttgagaata aatggccttt ttgttggttt ctgtaaaaaa aggacttta aaaaaaaaaa 606
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<210> 7

<211> 151

<212> PRT

<213> Rodent

<400> 7

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1 5 10 15
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Lys Asn Pro Gly Leu Val Leu Asp Ile Val Glu Asp Leu Arg Leu Ile  
35 40 45  
Asn Met Gln Ala Ile Phe Ala Lys Arg Thr Gly Met Ile Ile Leu Gly  
50 55 60  
Gly Gly Val Val Lys His His Ile Ala Asn Ala Asn Leu Met Arg Asn  
65 70 75 80  
Gly Ala Asp Tyr Ala Val Tyr Ile Asn Thr Ala Gln Glu Phe Asp Gly  
85 90 95  
Ser Asp Ser Gly Ala Arg Pro Asp Glu Ala Val Ser Trp Gly Lys Ile  
100 105 110  
Arg Met Asp Ala Gln Pro Val Lys Val Tyr Ala Asp Ala Ser Leu Val  
115 120 125  
Phe Pro Leu Leu Val Ala Glu Thr Phe Ala Gln Lys Ala Asp Ala Phe  
130 135 140  
Arg Ala Glu Lys Asn Glu Asp  
145 150

<210> 8  
<211> 453  
<212> DNA  
<213> Rodent

<400> 8  
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atcggtgagg acctgaggct catcaacaca caggccatct ttgccaagtg cactgggatg 180  
atcattctgg gcggggggcgt ggtcaagcac cacattgccca atgccaacct catgcggaac 240  
ggggccgact acgctgttta catcaacaca gcccgaggagt ttgatggctc tgactcaggt 300  
gcccagaccag acgaggctgt ctcctggggc aagatccggg tggatgcaca gcccgtaag 360  
gtctatgctg acgctccct ggtcttcccc ctgcttggg ctgaaacctt tgcccagaag 420  
atggatgcct tcatgcatga gaagaacgag gac 453

<210> 9  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Primer

<221> misc\_feature  
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<223> n = A,T,C or G

<400> 9  
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20

<210> 10  
<211> 42  
<212> DNA  
<213> Rodent

<220>

<223> Primer

<400> 10

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42

<210> 11

<211> 972

<212> DNA

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<220>

<221> CDS

<222> (1)...(330)

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1 5 10 15

gat att ttt act ggg aag aaa tat gaa gat atc tgc ccg tcg act cat 96  
Asp Ile Phe Thr Gly Lys Lys Tyr Glu Asp Ile Cys Pro Ser Thr His  
20 25 30

aac atg gat gtc ccc aac atc aaa agg aat gat ttc cag ctg att ggc 144  
Asn Met Asp Val Pro Asn Ile Lys Arg Asn Asp Phe Gln Leu Ile Gly  
35 40 45

atc cag gat ggg tac cta tcc ctg ctc cag gac agt ggg gag gta cga 192  
Ile Gln Asp Gly Tyr Leu Ser Leu Leu Gln Asp Ser Gly Glu Val Arg  
50 55 60

gag gac ctt cgt ctg cct gag gga gac ctt ggc aag gag att gag cag 240  
Glu Asp Leu Arg Leu Pro Glu Gly Asp Leu Gly Lys Glu Ile Glu Gln  
65 70 75 80

aag tat gac tgt gga gaa gag atc ctg atc aca gtg ctg tcc gcc atg 288  
Lys Tyr Asp Cys Gly Glu Glu Ile Leu Ile Thr Val Leu Ser Ala Met  
85 90 95

aca gag gag gca gct gtt gca atc aag gcc atg gca aaa taa 330  
Thr Glu Glu Ala Ala Val Ala Ile Lys Ala Met Ala Lys \*  
100 105

ctggcttcca ggggtggcggt ggtggcagca gtgatccatg agcctacaga ggccccctccc 390  
ccagctctgg ctggggccctt ggctggactc ctatccaatt tatttgacgt tttatttttg 450  
ttttcctcac cctttcaaac tgtcggggag accctgccct tcacctagct cccttgcca 510  
ggcatgaggg agccatggcc ttggtgaagc tacctgcctc ttctctcgca gccctgatgg 570  
gggaaaggga gtgggtactg cctgtggttt aggttccctc ctcccttttt ctttttaatt 630  
caatttgaa tcagaaagct gtggattctg gcaaatggc ttgtgtcctt tatccactc 690  
aaacccatct ggtccctgt tctccatagt ccttcacccc caagcaccac tgacagactg 750  
gggaccagcc cctttccctg cctgtgtctc ttcccaaacc cctctatagg ggtgacaaga 810  
agaggagggg gggaggggac acgatccctc ctccaggcatc tgggaaggcc ttgcccccat 870  
gggctttacc ctttctgtg ggctttctcc ctgacacatt tgttaaaaat caaacctgaa 930  
taaaactaca agtttaatat gaaaaaaaaa aaaaaaaaaa aa 972

<210> 12

<211> 109  
<212> PRT  
<213> Rodent

<400> 12  
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20 25 30  
Asn Met Asp Val Pro Asn Ile Lys Arg Asn Asp Phe Gln Leu Ile Gly  
35 40 45  
Ile Gln Asp Gly Tyr Leu Ser Leu Leu Gln Asp Ser Gly Glu Val Arg  
50 55 60  
Glu Asp Leu Arg Leu Pro Glu Gly Asp Leu Gly Lys Glu Ile Glu Gln  
65 70 75 80  
Lys Tyr Asp Cys Gly Glu Glu Ile Leu Ile Thr Val Leu Ser Ala Met  
85 90 95  
Thr Glu Glu Ala Ala Val Ala Ile Lys Ala Met Ala Lys  
100 105

<210> 13  
<211> 24  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Primer

<400> 13  
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<210> 14  
<211> 30  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Primer

<400> 14  
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<210> 15  
<211> 489  
<212> DNA  
<213> Rodent

<220>  
<221> CDS  
<222> (33)...(485)

<400> 15  
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Met Ala Asp Asp Leu Asp Phe  
1 5

gag aca gga gat gca ggg gcc tca gcc acc ttc cca atg cag tgc tca 101  
 Glu Thr Gly Asp Ala Gly Ala Ser Ala Thr Phe Pro Met Gln Cys Ser  
 10 15 20

gca tta cgt aag aat ggt ttt gtg gtg ctc aag ggc cgg cca tgt aag 149  
 Ala Leu Arg Lys Asn Gly Phe Val Val Leu Lys Gly Arg Pro Cys Lys  
 25 30 35

atc gtc gag atg tct act tcg aag act ggc aag cat ggc cat gcc aag 197  
 Ile Val Glu Met Ser Thr Ser Lys Thr Gly Lys His Gly His Ala Lys  
 40 45 50 55

gtc cat ctg gtt ggt att gat att ttt act ggg aag aaa tat gaa gat 245  
 Val His Leu Val Gly Ile Asp Ile Phe Thr Gly Lys Lys Tyr Glu Asp  
 60 65 70

atc tgc ccg tcg act cat aac atg gat gtc ccc aac atc aaa agg aat 293  
 Ile Cys Pro Ser Thr His Asn Met Asp Val Pro Asn Ile Lys Arg Asn  
 75 80 85

gat ttc cag ctg att ggc atc cag gat ggg tac cta tcc ctg ctc cag 341  
 Asp Phe Gln Leu Ile Gly Ile Gln Asp Gly Tyr Leu Ser Leu Leu Gln  
 90 95 100

gac agt ggg gag gta cga gag gac ctt cgt ctg cct gag gga gac ctt 389  
 Asp Ser Gly Glu Val Arg Glu Asp Leu Arg Leu Pro Glu Gly Asp Leu  
 105 110 115

ggc aag gag att gag cag aag tat gac tgt gga gaa gag atc ctg atc 437  
 Gly Lys Glu Ile Glu Gln Lys Tyr Asp Cys Gly Glu Glu Ile Leu Ile  
 120 125 130 135

aca gtg ctg tcc gcc atg aca gag gag gca gct gtt gca atc aag gct 485  
 Thr Val Leu Ser Ala Met Thr Glu Glu Ala Ala Val Ala Ile Lys Ala  
 140 145 150

cgag 489

<210> 16  
 <211> 151  
 <212> PRT  
 <213> Rodent

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 Leu Lys Gly Arg Pro Cys Lys Ile Val Glu Met Ser Thr Ser Lys Thr  
 35 40 45  
 Gly Lys His Gly His Ala Lys Val His Leu Val Gly Ile Asp Ile Phe  
 50 55 60  
 Thr Gly Lys Lys Tyr Glu Asp Ile Cys Pro Ser Thr His Asn Met Asp  
 65 70 75 80  
 Val Pro Asn Ile Lys Arg Asn Asp Phe Gln Leu Ile Gly Ile Gln Asp



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Gly	Tyr	Leu	Ser	Leu	Leu	Gln	Asp	Ser	Gly	Glu	Val	Arg	Glu	Asp	Leu
			100					105					110		
Arg	Leu	Pro	Glu	Gly	Asp	Leu	Gly	Lys	Glu	Ile	Glu	Gln	Lys	Tyr	Asp
		115					120					125			
Cys	Gly	Glu	Glu	Ile	Leu	Ile	Thr	Val	Leu	Ser	Ala	Met	Thr	Glu	Glu
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Ala	Ala	Val	Ala	Ile	Lys	Ala									
145						150									

<210> 17  
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 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Primer

<400> 17  
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20

<210> 18  
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 <212> DNA  
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<220>  
 <223> Primer

<400> 18  
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42

<210> 19  
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<400> 19  
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 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Primer

<400> 20  
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15

<210> 21

<211> 18  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Primer

<400> 21  
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18